

Science Undergraduate Laboratory Internships (SULI)

Summer 2022 - Application for: Loida Rosado Del Rio

APPLICANT PROFILE

General Applicant Information

First Name: Loida

Middle Name:

Last Name: Rosado Del Rio

Previous Last Name(s):

Primary Email Address: loida.rosado@upr.edu

Alternate Email Address 1: loidarosado1821@gmail.com

Alternate Email Address 2:

ORCID: [0000-0002-0157-137X](#)

Current Address

Primary Phone Number: 787-407-8083

Alternate Phone Number: 787-765-7042

Citizenship/Languages/Eligibility Information

I will be 18 years of age or older by the time the internship begins: Yes

Are you a U.S. Citizen? Yes

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EDUCATIONAL BACKGROUND

Academic Information

Are you currently attending a community college or 2-year college?

No

Current academic status:

Recent Graduate

If you are selected as a participant in this DOE program, will you receive academic credit from your university/college for participating?

No

Undergraduate Institution Information

College/University Country:

United States and U.S. Territories

College/University State/Province/Territory:

Puerto Rico

College/University Name:

University of Puerto Rico Rio Piedras Campus

College/University Address:

14, 2534 Av. Universidad Ste. 1401

College/University City:

Rio Piedras

College/University Zip Code:

00931-3302

Expected/Declared Major:

Physical Sciences - Physics

Expected Degree From This College/University:

Bachelor's

Expected/Completed Graduation Date:

May / 2022

Transcript:

transcript_LoidaRosado.pdf

Does this institution provide grades?

Yes

GPA Scale:

4.0

Total Attempted Credits:

161.00

Total Earned Credits:

146.00

Total Quality Points:

571.00

GPA:

3.91

Overall Cumulative GPA:

3.91

Science Undergraduate Laboratory Internships (SULI)

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Science, Technology, Engineering and Mathematics (STEM) Courses

Course Title: Calculus I & II

Course Number: MATE3151-52

Enrollment Status: Recently Completed

Course Title: Electromagnetism I & II

Course Number: FISI4068-69

Enrollment Status: Recently Completed

Course Title: Elements of Quantum Mechanics

Course Number: FISI4046

Enrollment Status: Recently Completed

Course Title: General Chemistry I & II

Course Number: QUIM3001-02

Enrollment Status: Recently Completed

Course Title: Intermediate Mechanics I & II

Course Number: FISI4051-52

Enrollment Status: Recently Completed

Course Title: Introduction to Computer Science

Course Number: CCOM3030

Enrollment Status: Recently Completed

Course Title: Introduction to Solid State Physics

Course Number: FISI4047

Enrollment Status: Planning to Enroll

Course Title: Linear Algebra

Course Number: MATE4031

Enrollment Status: Recently Completed

Course Title: Methods of Mathematical Physics I & II

Course Number: FISI4031-32

Enrollment Status: Recently Completed

Course Title: Modern Physics

Course Number: FISI4031

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Enrollment Status:	Recently Completed
Course Title:	Ordinary Differential Equations
Course Number:	MATE4009
Enrollment Status:	Recently Completed
Course Title:	Physics I & II
Course Number:	FISI3171-72
Enrollment Status:	Recently Completed
Course Title:	Thermodynamics and Statistical Mechanics
Course Number:	FISI4057
Enrollment Status:	Recently Completed
High School Graduation or GED	
Date of High School Graduation or GED:	May / 2016
Country:	Puerto Rico
City:	San Juan
State/Province/Territory:	Puerto Rico
Graduate School Information	
Have you applied to graduate school?	Yes
Country of Graduate School:	United States and U.S. Territories
State of Graduate School:	Florida
Name of Graduate School:	University of Florida
Planned Area of Graduate Studies:	Physical Sciences - Physics
Country of Graduate School:	United States and U.S. Territories
State of Graduate School:	Florida
Name of Graduate School:	University of Central Florida
Planned Area of Graduate Studies:	Physical Sciences - Physics
Country of Graduate School:	United States and U.S. Territories
State of Graduate School:	Pennsylvania
Name of Graduate School:	Temple University
Planned Area of Graduate Studies:	Physical Sciences - Physics

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WORK EXPERIENCE & SKILLS

Work Experience

Name of Place of Employment or Activity:	Jefferson Lab
Dates of Employment or Activity:	From 8/16/2021 To Present
Hours Per Week:	4.0
Primary Duties:	Undergraduate student researcher
Tasks Performed:	Continued research summer REU project Expanding search for pathways to medically interesting radioisotopes via proton, neutron, and alpha nucleus reactions
Name of Place of Employment or Activity:	Old Dominion University and Jefferson Lab REU
Dates of Employment or Activity:	From 6/1/2021 To 8/6/2021
Hours Per Week:	40.0
Primary Duties:	Summer Intern
Tasks Performed:	Conducted research on isotope production pathway Developed computer program to find new pathways to medically interesting radioisotopes via gamma-nucleus reactions
Name of Place of Employment or Activity:	Molecular Sciences Research Center
Dates of Employment or Activity:	From 5/28/2019 To 8/31/2021
Hours Per Week:	10.0
Primary Duties:	Undergraduate research assistant
Tasks Performed:	Synthesis of carbon materials Analysis of samples using RAMAN, SEM, and XRD spectroscopy Recording experiment preparation, process, and results for senior team members
Professional Associations	
Are you a member of any professional organizations?	No
Computer Skills	
Computer related skills:	Intermediate skills in Python and beginner skills in C++
Laboratory/Technical Skills	
Experience with advanced laboratory techniques or equipment:	Experience carrying out RAMAN, SEM, and XRD characterizations on carbon-material samples. Experience carrying out synthesis of carbon-materials using chemical vapor deposition

Science Undergraduate Laboratory Internships (SULI)

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PROGRAM INFORMATION

Eligibility

Have you previously participated in 2
SULI appointments? No

Previous DOE Internship/Fellowship or Lab Activity Experience

Have you ever had an
internship/fellowship with the
Department of Energy or any of its
National Laboratories (such as SULI,
CCI, VFP) or attended an activity at
one of the National Laboratories
(such as a Mini-Semester or
Sustainable Research Pathways)? Yes

Program: Other

DOE Laboratory or Site: Thomas Jefferson National Accelerator Facility (TJNAF)

Year: 2021

Availability

What is the earliest date you can
begin your internship? 5/9/2022

When do you need to complete your
internship? 8/12/2022

First Choice Host DOE Laboratory

DOE Laboratory: Thomas Jefferson National Accelerator Facility (TJNAF)

First Choice Research Area: Nuclear Physics

Second Choice Research Area: High Energy Physics

Third Choice Research Area: Accelerator Physics/Science

Second Choice Host DOE Laboratory

DOE Laboratory: Oak Ridge National Laboratory (ORNL)

First Choice Research Area: Nuclear Physics

Second Choice Research Area: High Energy Physics

Third Choice Research Area: Accelerator Physics/Science

Relatives Employed at DOE Laboratories

Are you a relative of an employee at
the proposed host DOE laboratories? No

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ESSAYS

Research Experience:	<p>In 2019, I participated in the NASA Puerto Rico Space Grant Consortium Internship, where I worked with Carolina Rojas on a project that consisted in developing 3D carbon-materials for carbon dioxide absorption. For this project, I carried out a synthesis process utilizing chemical vapor deposition to produce said 3D carbon-material samples and developed modifications to the previous synthesis process in order to maximize the yield and efficiency of the process, which were then approved and incorporated in the methodology. I have performed RAMAN characterizations and carbon dioxide emission tests on said samples and recorded and analysed the data. At the end of the summer, I was given the opportunity to stay on the research team after the internship finalized as an undergraduate research assistant during the semester.</p> <p>In 2020, I participated in the REU program hosted by the Triangle Universities Nuclear Laboratory and Duke University. During this internship, I worked on a project that calculated neutrino interactions in binary neutron star mergers. This was done using a software program called SNOwGLOBES, which is used to calculate the interaction rates and distributions for supernova burst neutrinos. Using SNOwGLOBES I created a neutrino flux based on a set of parameters to calculate the expected observed neutrino event energy distribution, and average neutrino energy and luminosity for a merger at 10 kpc. With the results of this project, we were able to simulate what a signal from a merger would be like with argon detectors. At the end of the summer, I was given the opportunity to continue the research during the fall semester of 2020; this time simulating a signal from the same merger for different detector configurations such as water, lead-based, and scintillator.</p> <p>In 2021, I was part of the Thomas Jefferson National Accelerator Facility and Old Dominion University REU, where I worked under Dr. Andrew Hutton on a project to find new isotope production pathways. During the summer I worked on developing a computer program that would evaluate gamma-nucleus reactions in order to find suitable target isotopes for the production of radioisotopes of medical interest. The computer program that I developed identified several possible target isotopes, some of which are already in use commercially. I have continued working on this project during the semester and am currently expanding the search for target isotopes to include a wider range of projectiles.</p>
Research Interests:	<p>As first choice in host laboratory, I picked the Thomas Jefferson National Accelerator Facility, and the Oak Ridge National Laboratory as a second choice. This because of the many opportunities for Accelerator, Nuclear, and High Energy Physics that are available in these laboratories.</p> <p>I picked Nuclear Science and High Energy Physics as my first and second choices for research areas. The "what" and "why" of the Universe is something that has always fascinated me, and the reason I chose to pursue Physics in the first place. By researching in nuclear or high energy physics, I have the chance to answer these questions and learn about topics such as dark matter and energy, cosmic acceleration, and fundamental particles, or even new particles.</p> <p>As third choice, I placed Accelerator Physics/Science, since I am also especially interested in research with particle accelerators and their role in high energy physics. I would love to learn more about their operation and how they contribute to our understanding of atoms on the Earth, in our Galaxy, and in the Universe.</p> <p>Being able to go to either laboratory and have the experience of researching any of these topics would fulfill my goals and help me in my academic life by broadening my knowledge in areas that I am passionate about want to go into in my academic and professional future.</p>
Personal Experience:	<p>Even as a child, I have always been a questioner. Never content with surface-level explanations, I always asked "why" and "how" things happened or were the way they were. This curious nature is what made me go into the science field and made me especially focus on Physics. It is a tool I feel makes me a good learner and researcher, since I strive to find explanations and reasoning in everything I do.</p> <p>Throughout my academic career, I have learned many things. But I have mostly learned the</p>

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	<p>importance of responsibility, time-management, and dedication. It is my belief that in order to be successful, you must be responsible not only with yourself, but with others, and to value and appropriately use your time to achieve your goals. I believe these qualities are skills that when applied to scientific research, greatly improve the outcome and the experience; and qualities that I have refined over the years.</p> <p>By this summer's time I will have completed my bachelor's in Physics in the University of Puerto Rico. As such, I have had the opportunity to take all of the required physics courses, which has given me the theoretical and academic tools I need; while also having been able to participate in several internship programs that have provided me with the investigative and practical skills that are also needed in a researcher.</p>
Professional Goals:	<p>I am currently in the last semester of my bachelor's in Physics at the University of Puerto Rico; after which I hope to continue on in a doctoral program in Nuclear or High Energy Physics. The fields of Physics that interest me for a doctorate degree are Nuclear and High Energy. It is my hope that by being a part of the SULI program I will gain knowledge in these fields that will be indispensable for my future as a graduate student. Additionally, it might introduce me to new scientific fields and research areas I had not been familiar with and broaden my possibilities.</p> <p>In the future I want to be working in a laboratory as a graduate researcher and be able to contribute to the research done in that area. Participation in the SULI program will greatly help me by introducing me to professional researchers and mentors that can help me improve my skills and show me more of what being a researcher entails.</p> <p>Being a part of the SULI program would be an experience that would greatly affect my academic life, as it would introduce me to new topics, equipment, and procedures. I believe that this opportunity would give me the tools and the instruction to become a better student and a future scientist, in addition to further preparing me for my graduate studies.</p>

RECOMMENDATIONS

Recommendation 1:	<p>First Name: Andrew Last Name: Hutton Email: andrew@jlab.org Status: Received 1/11/2022</p>
Recommendation 2:	<p>First Name: Carolina Last Name: Rojas-Michea Email: carolina.rojas@upr.edu Status: Received 1/9/2022</p>

ROSADO DEL RIO, LOIDA

801-16-8000

UNDERGRAD SEM Academic Record

SECOND SEMESTER 2016-2017
RECINTO UNIVERS DE RIO PIEDRAS

Secondary Schools:

COLEGIO CONGREGACION MITA

IGS: B61-351

00/00 - 05/16

Program:

NATURAL SCIENCES

BACHELOR OF SCIENCES

Major: PHYSICS

		[CT]			
CIFI-3016	PH SC NANOTECH & SOCIETY	A	S	3.00	12.00
CISO-3122	INTROD TO SOCIAL SCIENCE	A	S	3.00	12.00
INGL-3152	HUMAN CONDIT IN LITE II	A	S	3.00	12.00
MATE-3023	PRECALCULUS I	A	S	2.00	8.00
HUMA-3014	VIEW WEST: GREECE TO BYZAN	A	S	3.00	12.00

FIRST SEMESTER 2016-2017
RECINTO UNIVERS DE RIO PIEDRAS

	AHRS	EHRS	QHRS	OPTS	GPA
Current	14.00	14.00	14.00	56.00	4.000
Cumulative	41.00	41.00	29.00	116.00	4.000

Admitted Program:

EDUCATION

BACH OF ARTS-SECOND EDUCATION

Major: SCIENCES

Status: Dean's List

FIRST SEMESTER 2017-2018
RECINTO UNIVERS DE RIO PIEDRAS

		[CT]			
EDFU-3012	FOUND EDUCATIONAL PSYCH	A	S	3.00	12.00
FAED-4001	PROFESSIO REFLECTIVE SEM I	P	S	1.00	0.00
MATE-3024	PRECALCULUS II	A	S	2.00	8.00
HUMA-3013	VIEW WEST: GREECE TO BYZAN	A	S	3.00	12.00
HUMA-3042	MUSIC WEST CLASICI-PRESENT	A	S	3.00	12.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	12.00	12.00	11.00	44.00	4.000
Cumulative	53.00	53.00	40.00	160.00	4.000

Status: Dean's List

***** No Further Entries This Page *****

		[CT]			
MATE-3001	INTRODUCTORY MATH I	A	S	3.00	12.00
CIBI-3028	SCIENCE BIOTECH & SOCIETY	A	S	3.00	12.00
CISO-3121	INTROD TO SOCIAL SCIENCE	A	S	3.00	12.00
EDFU-3011	FOUND HUMAN DEVELOPMENT	A	S	3.00	12.00
INGL-3151	HUMAN CONDIT IN LITE I	A	S	3.00	12.00
ESPA-3101	BASIC SPANISH I	P	S	3.00	0.00
CREDIT BY ADVANCED PLACEMENT					
ESPA-3102	BASIC SPANISH II	P	S	3.00	0.00
CREDIT BY ADVANCED PLACEMENT					
INGL-3101	BASIC ENGLISH I	P	S	3.00	0.00
CREDIT BY ADVANCED PLACEMENT					
INGL-3102	BASIC ENGLISH II	P	S	3.00	0.00
CREDIT BY ADVANCED PLACEMENT					

	AHRS	EHRS	QHRS	OPTS	GPA
Current	27.00	27.00	15.00	60.00	4.000
Cumulative	27.00	27.00	15.00	60.00	4.000

Status: Dean's List

***** No Further Entries This Column *****

Ms. LOIDA ROSADO DEL RIO

01 of 03
01/09/2022
Student Copy
Academic Record

----- SECOND SEMESTER 2017-2018 -----
 RECINTO UNIVERS DE RIO PIEDRAS

ASTR-3055	COSMIC EVOLUTION	A	S	3.00	12.00
MATE-3151	CALCULUS I	A	S	4.00	16.00
HIST-4009	HISTORY AND ANTHROPOLOGY	A	S	3.00	12.00
CNEI-3005	SCIENCE-PSEUDOSCIENCE	A	S	3.00	12.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	13.00	13.00	13.00	52.00	4.000
Cumulative	66.00	66.00	53.00	212.00	4.000

Status: Dean's List

----- SUMMER 2018 -----
 RECINTO UNIVERS DE RIO PIEDRAS

MATE-3152	CALCULUS II	A	S	4.00	16.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	4.00	4.00	4.00	16.00	4.000
Cumulative	70.00	70.00	57.00	228.00	4.000

----- FIRST SEMESTER 2018-2019 -----
 RECINTO UNIVERS DE RIO PIEDRAS

ASTR-3005	DESCRIPTIVE ASTRONOMY	A	S	3.00	12.00
CCOM-3030	INTROD TO COMPUTER SCIENCE	A	S	3.00	12.00
FISI-3171	PHYSICS I	B	S	4.00	12.00
FISI-3173	PHYSICS I LABORATORY	A	S	1.00	4.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	11.00	11.00	11.00	40.00	3.636
Cumulative	81.00	81.00	68.00	268.00	3.941

***** No Further Entries This Column *****

----- SECOND SEMESTER 2018-2019 -----
 RECINTO UNIVERS DE RIO PIEDRAS

Program Changed To:
 NATURAL SCIENCES
 BACHELOR OF SCIENCES
 Major: PHYSICS

FISI-3172	PHYSICS II	A	S	4.00	16.00
FISI-3174	PHYSICS II LABORATORY	A	S	1.00	4.00
CIBI-4105	INTERD APPR ASSISTED REPRO	A	S	3.00	12.00
FISI-4041	SPECIAL TOPICS IN PHYSIC	B	S	3.00	9.00
MUSI-3175	INTR EAR TRAIN, SIGH SING	A	S	3.00	12.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	14.00	14.00	14.00	53.00	3.786
Cumulative	95.00	95.00	82.00	321.00	3.915

Status: Dean's List

----- FIRST SEMESTER 2019-2020 -----
 RECINTO UNIVERS DE RIO PIEDRAS

FISI-4051	INTERMEDIATE MECHANIC I	A	S	3.00	12.00
FISI-4031	METHODS OF MATH PHYSICS	B	S	3.00	9.00
FISI-3016	MODERN PHYSICS	A	S	3.00	12.00
QUIM-3001	GENERAL CHEMISTRY I	A	S	4.00	16.00
FISI-4058	UNDERGRADUATE RESEARCH	A	S	3.00	12.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	16.00	16.00	16.00	61.00	3.813
Cumulative	111.00	111.00	98.00	382.00	3.898

Status: Dean's List

***** No Further Entries This Page *****

----- SECOND SEMESTER 2019-2020 -----
 RECINTO UNIVERS DE RIO PIEDRAS

-----[CT]-----					
FISI-4052	INTERMEDIATE MECHANIC I	A	S	3.00	12.00
FISI-4032	METHODS OF MATH PHYSICS	A	S	3.00	12.00
QUIM-3002	GENERAL CHEMISTRY II	A	S	4.00	16.00
FISI-4058	UNDERGRADUATE RESEARCH	A	S	3.00	12.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	13.00	13.00	13.00	52.00	4.000
Cumulative	124.00	124.00	111.00	434.00	3.910

Status: Dean's List

----- FIRST SEMESTER 2020-2021 -----
 RECINTO UNIVERS DE RIO PIEDRAS

-----[CT]-----					
FISI-4068	ELECTROMAGNETISM I	A	S	3.00	12.00
ESPA-3211	INTROD SPANISH LITE I	A	S	3.00	12.00
INGL-3236	SCIENTIFIC WRITING	A	S	3.00	12.00
CIBI-4105	STEM CELLS	A	S	3.00	12.00
QUIM-4117	TUTORIAL IN CHEMISTRY	P	S	1.00	0.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	13.00	13.00	12.00	48.00	4.000
Cumulative	137.00	137.00	123.00	482.00	3.919

Status: Dean's List

***** No Further Entries This Column *****

----- SECOND SEMESTER 2020-2021 -----
 RECINTO UNIVERS DE RIO PIEDRAS

-----[CT]-----					
FISI-4069	ELECTROMAGNETISM II	B	S	3.00	9.00
FISI-4057	THERMODYNAM, STAT MECHAN	A	S	3.00	12.00
MATE-4009	ORDINARY DIFFER EQUATION	A	S	3.00	12.00
HART-3118	ART IN PUERTO RICO	A	S	3.00	12.00
QUIM-4117	TUTORIAL IN CHEMISTRY	P	S	1.00	0.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	13.00	13.00	12.00	45.00	3.750
Cumulative	150.00	150.00	135.00	527.00	3.904

Status: Dean's List

----- FIRST SEMESTER 2021-2022 -----
 RECINTO UNIVERS DE RIO PIEDRAS

-----[CT]-----					
FISI-4046	ELEM OF QUANTUM MECHANIC	A	S	3.00	12.00
FISI-4041	SPECIAL TOPICS IN PHYSIC	A	S	3.00	12.00
FISI-4076	INTERMEDIATE LABORAT I	A	S	2.00	8.00
MATE-4031	LINEAR ALGEBRA	A	S	3.00	12.00

	AHRS	EHRS	QHRS	OPTS	GPA
Current	11.00	11.00	11.00	44.00	4.000
Cumulative	161.00	161.00	146.00	571.00	3.911

** End Of UNDERGRAD SEM Record **

SULI PROGRAM APPLICATION RECOMMENDATION FOR LOIDA ROSADO DEL RIO

Recommender Contact Information

- **First Name:** Carolina
- **Last Name:** Rojas Michea
- **Title:** Industrial Chemical Engineering
- **Department:** Natural Sciences
- **Institution/Organization:** University of Puerto Rico
- **Telephone:** 787-595-8924
- **Email:** carolina.rojas@upr.edu

Applicant Information

Association

Describe your relationship to the applicant, including how long you've known the applicant, where, and in what capacity.

I met Loida in the **summer of 2019**, in a summer internship at the University of Puerto Rico. She worked with me on my research project developed in the **Comprehensive Cancer Center** from the University of Puerto Rico, medical sciences faculty. We worked on increasing the performance of the three-dimensional carbon materials growing by chemical synthesis methods. She has begun a summer internship but finished interested in my research, and we keeps working together until 2021 summer.

Applicant Comments

Please provide substantive comments about the applicant's education, training, aptitude, or promise relevant to the SULI program. Include any relevant additional detail or perspective regarding the applicant's research experience or equivalent experience on complex projects, including the level of independence or other factors that would contribute to the applicant's ability to make an excellent contribution to the SULI program.

Loida is a great student; she has a great commitment to science and research. She is a proactive student and their physics knowledge gives her a good background in many fields to support complex and challenging research. In my personal case, Loida supported the work in at least three fields of research. She worked in the design, and synthesis optimization, and applications of the materials. Operations of equipment and sensors. Besides Loida has experience in quotation and purchase of sensors and reagents to the laboratory. In this sense She is very independent, I just asked her for anything and she managed and resolved. As I told you previously, she is a proactive and useful student to any research team. In other areas, Loida was an active participant in the society of Women in Space Exploration, University of Puerto Rico, Río Piedras campus chapter. Definitely for me was a pleasure to work with her for almost three years and do not doubt that she will do excellent work and be a terrific contribution to the SULI program.

Applicant Rating

In comparison to other undergraduate students, please rate the applicant relative to his/her peers on the following qualifications:

	Do Not Know	Below Average	Average	Above Average	Superior
Analytical and Mathematical					X
Experimental Research				X	
Overall Academic					X
Initiative and Self Reliance					X
Motivation toward Scientific Career					X
Originality of Thought					X
Emotional Maturity					X
Ability to Work with Others					X
Potential for Leadership					X
Oral Communication Skills					X
Written Communication Skills					X

SULI PROGRAM APPLICATION RECOMMENDATION FOR LOIDA ROSADO DEL RIO

Recommender Contact Information

- **First Name:** Andrew
- **Last Name:** Hutton
- **Title:** Principal Scientist
- **Department:** Accelerator Division
- **Institution/Organization:** Jefferson Lab
- **Telephone:** 757-876-1776
- **Email:** andrew@jlab.org

Applicant Information

Association

Describe your relationship to the applicant, including how long you've known the applicant, where, and in what capacity.

Loida applied for, and was accepted into, the 2021 REU program at Jefferson Lab, managed by Old Dominion University. I was asked to be a mentor for one of the students, and I selected Loida based on her grades and previous research experience at TUNL, Duke University the year before.

I tasked Loida with carrying out a systematic search to look for promising paths for isotope production. At Jefferson Lab, we have a high-power superconducting electron accelerator, so I initially asked Loida to concentrate on isotopes that could be produced by bremsstrahlung radiation from electrons hitting a tungsten radiator. The list of medically interesting isotopes came from the DOE publication "Isotopes for the Nation's Future."

Loida created a program which examined over 70,000 reactions and selected those that produced radioisotopes that would be suitable for production, using cuts on the lifetime and cross-section. To my knowledge, no one has ever attempted such a wide-reaching overview of radioisotope production processes. While I provided guidance on what should be done, my computer skills are so out of date that all of the programming was carried out by Loida with little help. At the end of the REU program, Loida prepared and presented a poster and a talk (all virtual) on her work.

Given her success, I managed to secure funding for her to continue working with me part-time during the university year. I realized that her program could be expanded to cover, not only gamma irradiation, but also proton and neutron irradiation. Loida looked at over 300,000 different reactions. Loida made an excellent presentation of her work at the 14th International Topical Meeting on Nuclear Applications of Accelerators in Washington DC, unusual for an undergraduate scientist.

Applicant Comments

Please provide substantive comments about the applicant's education, training, aptitude, or promise relevant to the SULI program. Include any relevant additional detail or perspective regarding the applicant's research experience or equivalent experience on complex projects, including the level of independence or other factors that would contribute to the applicant's ability to make an excellent contribution to the SULI program.

Having mentored Loida for about nine months, I can state with confidence that she is an extremely able student, self motivated and independent (Loida's successfully completed my project remotely, I have not yet met Loida in person). I cannot recommend her

more highly for the SULI program at ORAU.

Applicant Rating

In comparison to other undergraduate students, please rate the applicant relative to his/her peers on the following qualifications:

	Do Not Know	Below Average	Average	Above Average	Superior
Analytical and Mathematical				X	
Experimental Research	X				
Overall Academic				X	
Initiative and Self Reliance					X
Motivation toward Scientific Career					X
Originality of Thought				X	
Emotional Maturity				X	
Ability to Work with Others					X
Potential for Leadership					X
Oral Communication Skills					X
Written Communication Skills					X